

REMARKS

Claims 24-32 are cancelled herein, leaving amended claims 14-22 and new claims 33-38 pending. The amendments to claims 14-22 are intended to render the claims more grammatically correct, and therefore are cosmetic in nature and non-narrowing. New claims 33-38 individually are directed to specific T cell-mediated diseases set forth in claim 14. Thus, the claim amendments and the new claims add no new matter and are fully supported by the specification.

The applicants appreciate and acknowledge the Office's withdrawal of the rejection of claims 14-22 under 35 U.S.C. § 102(b) and 35 U.S.C. § 112, first paragraph. The applicants now address the new rejections of claims 24-32 under 35 U.S.C. § 102(b) and the rejection of claims 14-22 and 24-32 under 35 U.S.C. § 103(a).

The rejection of claims 24-32 under 35 U.S.C. § 102(b) is moot as these claims are cancelled herein. Thus, it is respectfully requested that the Office withdraw this rejection.

The Office rejected claims 14-22 and 24-32 under 35 U.S.C. § 103(a) as allegedly being unpatenable over Gijbels *et al.* (1995) in view of Vink *et al.* (1990). The Office argued that the Gijbels' document teaches the administration of anti-IL-6 antibodies in the EAE model of multiple sclerosis, and that the document did not disclose administration of anti-IL-6 receptor antibodies. Also, the Office argued that Vink taught the administration of anti-IL-6 receptor antibodies and anti-IL-6 antibodies, and combined Vink with Gijbels in an effort to arrive at the pending claims. The stated motivation for combining the documents was that the observed protective effect of the anti-IL-6 antibody for EAE discussed in Gijbels might also have a therapeutic effect for inflammatory conditions of the CNS, including MS.

The rejection is respectfully traversed. Specifically, the combination of Gijbels with Vink cannot support a *prima facie* showing of obviousness because there was no motivation to combine the documents and there was no reasonable expectation that administering an anti-IL-6 receptor antibody would successfully treat a T cell-mediated disease.

There was no Reasonable Expectation for Successfully Treating a Sensitized T Cell-Mediated Disease with an Anti-IL-6 Receptor Antibody

The Office appears to base the rejection upon the observations that Gijbels reported a beneficial effect of administering an antibody specific to IL-6 in an EAE model and Vink reported a beneficial effect of administering antibodies against IL-6 and IL-6 receptor in a plasmacytoma model. The Office concluded that it would have been obvious to perform an experiment in which an anti-IL-6 receptor antibody is administered to a patient to treat a sensitized T cell-mediated disease. The Court of Appeals for the Federal Circuit has held that this obvious to try rationale is an insufficient basis for obviousness where there is no reasonable expectation for success. There was no reasonable expectation that anti-IL-6 receptor antibodies could be successfully utilized in the treatment of sensitized T cell-mediated diseases at the time of filing for at least two reasons.

First, Gijbels failed to establish that the reported therapeutic effect was due to a reduction of IL-6 activity. While Gijbels reported a therapeutic effect in an EAE model system when an antibody specific for IL-6 was administered, the document never established that the reported therapeutic effect was caused by neutralization of IL-6 activity. In fact, administration of the antibody actually caused an increase in the levels of IL-6 in the mice being tested. This result was counter-intuitive because increased levels of IL-6 presumably would lead to a higher cytokine activity, which is exactly the opposite effect intended by administration of an anti-IL-6

antibody. Thus, Gijbels never determined whether the reported therapeutic effect was due to neutralization of IL-6 activity, and therefore it was concluded that "due to the complex nature of the *in vivo* interactions of administered antibodies, the disease reducing effect of the anti-IL-6 antibodies could be caused by neutralization of IL-6 activity or by enhancement of IL-6 activity via induction of higher IL-6 levels in the CNS." Therefore, because Gijbels never established that the reported therapeutic effect in the EAE model was due to IL-6 neutralization, there was no reasonable expectation that an anti-IL-6 receptor antibody would yield a therapeutic effect.

Second, Vink failed to show that antibodies specific to the IL-6 receptor would have a therapeutic effect on a disease other than plasmacytoma. Vink discussed only experiments in which the antibody against IL-6 receptor reportedly treated plasmacytoma, which is a disease of plasma B cells not sensitized T cells. Thus, it was not until the applicant filed the present application that it was shown sensitized T cell-mediated diseases could be treated by administering an antibody specific to the IL-6 receptor. Hence, there was no reasonable expectation for effecting a therapy for sensitized T cell-mediated diseases before the effective date of the present application.

There was no Motivation to Combine Gijbels with Vink

There was no motivation to combine the cited documents because the combination does not meet the requirements set forth by the Court of Appeals for the Federal Circuit (CAFC) in *In Re Rouffet*, 47 USPQ.2d 1453 (Fed.Cir. 1998). A copy of the decision is attached as Exhibit B. The CAFC reversed a finding of unpatentability made by the Board of Appeals on the basis that there was no motivation to combine the documents cited for the rejection of Rouffet's claims.

Attention is called to page 1458 of the decision where the Court identified three possible bases for motivation to combine references. The first listed basis, "the nature of the problem to

be solved,” is not found here as the claims address methods for treating a sensitized T cell-mediated disease by administering an anti-IL-6 receptor antibody. Combining Gijbels with Vink does not advance the solution to this problem as Vink addresses methods of treating plasmacytoma, a disease of plasma B cells, not treating sensitized T cell-mediated diseases. Further, Gijbels only addresses treatment of EAE with an anti-IL-6 antibody, not an anti-IL-6 receptor antibody.

The second basis, “the teachings of the prior art,” is not found here either as there is no motivation provided by the documents themselves. As noted above, Vink reported an effect on plasmacytoma by administering of an antibody specific to IL-6 receptor and did not establish that such an antibody was useful for treating other diseases. Because the claims are directed to methods for treating sensitized T-cell diseases, the person of skill in the art would not necessarily apply the anti-IL-6 receptor antibody used to treat B cell related diseases from Vink. Also, because Gijbels established no link between IL-6 suppression and the reported therapeutic effect in the EAE model, the person of ordinary skill in the art was not motivated to apply an anti-IL-6 receptor antibody to the EAE system. Thus, there is not enough in common between Gijbels and Vink to suggest a combination of the two documents.

The third basis is “the knowledge of persons of ordinary skill in the art.” In order to apply this basis, the Court stated that it would be necessary to “explain what specific understanding or technological principle within the knowledge of one of ordinary skill in the art would have suggested the combination” and concluded that “the Board merely invoked the high level of skill in the field of the art. If such a rote invocation would suffice to supply a motivation to combine, the more sophisticated scientific fields would rarely, if ever, experience a patentable technical advance.”

As noted above, because Gijbels fails to establish a link between IL-6 suppression and the reported therapeutic effect in the EAE model, and because it was stated that there is a "complex nature" of the *in vivo* interactions of administered antibodies," the person of ordinary skill in the art would not have necessarily experimented with other antibodies, including those capable of neutralizing IL-6 activity. Also, the motivation stated by the Office might have led the person of ordinary skill to experimentally apply an anti-IL-6 antibody for treatment of MS, not an antibody specific for the receptor, since Gijbels reported a therapeutic effect on EAE using only the IL-6-directed antibody. Further, because the Vink disclosure indicated that the person of ordinary skill in the art knew only that anti-IL-6 receptor antibodies might be useful for treating plasmacytoma, the person of ordinary skill did not appreciate that such an antibody could be utilized to treat other diseases, such as sensitized T cell-mediated diseases. Because the Office has not provided further evidence of the ordinary skill in the art, it is reasonable to conclude that the person of ordinary skill did not appreciate the applicability of anti-IL-6 receptor antibodies to the treatment of sensitized T cell-mediated diseases until the present invention.

The CAFC commented that the knowledge of persons of ordinary skill in the art may be evidenced by certain references of special importance, *i.e.*, that one or both of the cited documents is so well known that anyone in the art would be familiar with the documents. An example would be the famous Kohler and Millstein paper on monoclonal antibody preparations. Clearly, neither Gijbels or Vink rise to this level.

Therefore, it should be apparent that the required motivation for combining the cited documents is not present here according to the CAFC analysis in *In re Rouffet*.

Conclusions

Hence, there was no reasonable likelihood for successfully treating a sensitized T cell-mediated disease with an anti-IL-6 receptor antibody before the present application, and there was no motivation to combine the cited documents. Thus, it should be apparent that the cited combination cannot support a *prima facie* showing for obviousness with respect to claims 14-22 and new claims 33-38. Hence, it is respectfully requested that the Office withdraw this rejection under 35 U.S.C. § 103 and issue a notice of allowance.

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing Docket No. 350292000800. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Respectfully submitted,

Dated: December 2, 2002

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EXHIBIT A. - MARKED VERSION OF THE CLAIMS

In the Claims:

Please amend claims 14-22 as follows:

14. (Amended) A method for treating a sensitized T cell-mediated disease[s], which compris[ing]es administering to a patient in need thereof a pharmaceutical composition comprising an antibody directed against interleukin-6 (IL-6) receptor and a pharmaceutically acceptable carrier, wherein the sensitized T cell-mediated disease[s are] is multiple sclerosis, uveitis, chronic thyroiditis, delayed hypersensitivity, contact dermatitis, or atopic dermatitis.

15. (Amended) The method according to claim 14, wherein the antibody directed against the IL-6 receptor is a monoclonal antibody.

16. (Amended) The method according to claim 15, wherein the monoclonal antibody is directed against the human IL-6 receptor.

17. (Amended) The method according to claim 15, wherein the monoclonal antibody is directed against the mouse IL-6 receptor.

18. (Amended) The method according to claim 16, wherein the monoclonal antibody is the PM-1 antibody.

19. (Amended) The method according to claim 17, wherein the monoclonal antibody is the MR16-1 antibody.

20. (Amended) The method according to claim 16, wherein the monoclonal antibody has the constant region of a human antibody.

21. (Amended) The method according to claim 16, wherein the monoclonal antibody is a chimeric or humanized antibody directed against the IL-6 receptor.

22. (Amended) The method according to claim 21, wherein the monoclonal antibody is a humanized PM-1 antibody.

mately 80% of the total amount sought for that period.

[6] A total award of \$130,643.75 for attorneys' fees is appropriate in this case in light of the *Kimbrell's* factors that apply. Preparation for the trial with respect to this particular defendant involved several pre-trial motions, several raising complex factual questions, and the fast pace of this docket required an intense dedication of attorney time to the litigation. (Factors 1, 2 and 7). Moreover, the Court notes that plaintiffs' counsel took the case on a contingent fee basis, which means that given the amount of the judgment, they will be made whole for all work expended in this case. We also point out that the actual trial was relatively short, partly as a result of the defendant's having so little evidence to present. Finally, in light of the damages awarded, \$130,643.75 is not an unreasonably high attorneys' fee. (Factor 8 and 12).

With respect to costs, the Court finds it appropriate, for the same reasons discussed above, to award the plaintiffs the total amounts reflected only on the law firm's invoices dated March 26, 1998 (\$37,612.84) and April 9, 1998 (\$17,309.51), for a total award of \$54,922.35. This amount includes all costs incurred from February 23, 1998, to April 9, 1998.

IV. Conclusion

For the reasons stated in open court and in this Memorandum Opinion, BRFG's Motion for Declaration of Mistrial and Motion for a JNOV or in the Alternative a New Trial will be denied. In addition, plaintiffs' Motion of Trebled Damages and Attorneys' Fees will be denied as to the trebled damages and granted as to the attorneys' fees and costs, and the Court will award plaintiffs \$130,643.75 in attorneys' fees and \$54,922.25 in costs. An appropriate order will issue.

The Clerk is directed to forward copies of this Memorandum Opinion to counsel of record.

ORDER

For the reasons stated in an accompanying Memorandum Opinion, SRFG's Motion for Declaration of Mistrial and Motion for a JNOV or in the Alternative a New Trial are DENIED, and plaintiffs' Motion for Trebled Damages and Attorneys' Fees is GRANTED IN PART as to attorneys' fees and costs and DENIED as to trebled damages, and it is hereby.

ORDERED that plaintiffs be and are awarded \$130,643.75 in attorneys' fees and

\$54,922.35 in costs, for a total award of \$185,566.10.

The Clerk is directed to forward copies of this Order to counsel of record.

U.S. Court of Appeals
Federal Circuit

In re Rouffet

No. 97-1492

Decided July 15, 1998

PATENTS

1. Patentability/Validity — Obviousness — Combining references (§115.0905)

Claimed low orbit satellite communications system for mobile terminals, which addresses problem of minimizing "handover" of receiver from beam footprint of one transmitting satellite to that of another through use of multiple fan-shaped beams, is not prima facie obvious over combination of three prior art references, since critical reference that teaches use of fan-shaped beam to transmit from ground station to orbiting satellites does not specifically address handover minimization, and to extent it addresses handover problem at all, does so with orbit selection rather than beam shape, and since there is no reason one of ordinary skill in art, seeking to minimize handovers due to satellite motion, would have been motivated to combine this reference with remaining references in manner that would render claimed invention obvious.

2. Patentability/Validity — Obviousness — Person of ordinary skill in art (§115.0902)

Patentability/Validity — Obviousness — Combining references (§115.0905)

Three possible sources for motivation to combine prior art references in manner that would render claimed invention obvious are nature of problem to be solved, teachings of prior art, and knowledge of persons of ordinary skill in art; high level of skill in field of art cannot be relied upon to provide necessary motivation absent explanation of what specific understanding or technical principle, within knowledge one of ordinary skill in art, would have suggested combination, since, if such rote invocation could suffice to supply motivation to combine, more sophisticated scientific fields would rarely, if ever, experience patentable technical advance.

3. Patentability/Validity — Obviousness — Person of ordinary skill in art (§115.0902)

Patentability/Validity — Obviousness — Combining references (§115.0905)

Claimed low orbit satellite communications system for mobile terminals is not *prima facie* obvious over combination of two prior art references, even though person possessing high level of skill characteristic of this field would know to account for differences between claimed invention and prior art combination, since high level of skill in art, without more, cannot supply required motivation to combine references, and does not overcome absence of any actual suggestion to combine; obviousness rejection will not be upheld, even where skill in art is high, absent specific identification of principle, known to one of ordinary skill, that suggests claimed combination.

Appeal from the U.S. Patent and Trademark Office. Board of Patent Appeals and Interferences.

Patent application of Denis Rouffet, Yannick Tanguy, and Frédéric Berthault, serial no. 07/888,791, filed May 27, 1992. From decision upholding examiner's final rejection of application as obvious under 35 USC 103(a), applicants appeal. Reversed.

Richard C. Turner and Grant K. Rowan, of Sughrue, Mion, Zinn, Macpeak & Seas, Washington, D.C., for appellants.

David J. Ball Jr., associate solicitor, Nancy J. Linck, solicitor, Albin F. Drost, deputy solicitor, Craig R. Kaufman, associate solicitor, and Scott A. Chambers, associate solicitor, U.S. Patent and Trademark Office, Arlington, Va., for appellee.

Before Plager, circuit judge, Archer, senior circuit judge, and Rader, circuit judge.

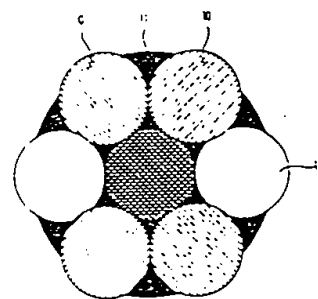
Rader, J.

Denis Rouffet, Yannick Tanguy, and Frédéric Berthault (collectively, Rouffet) submitted application 07/888,791 (the application) on May 27, 1992. The Board of Patent Appeals and Interferences (the Board) affirmed final rejection of the application as obvious under 35 U.S.C. § 103(a). *See Ex parte Rouffet*, No. 96-1553 (Bd. Pat. App. & Int. Apr. 16, 1997). Because the Board reversibly erred in identifying a motivation to combine the references, this court reverses.

1

Satellites in a geosynchronous or geostationary orbit remain over the same point on the Earth's surface. Their constant position above the Earth's surface facilitates communications. These satellites project a number of beams to the Earth. Each beam transmits to its area of coverage, or footprint, on the Earth's surface. In order to provide complete coverage, adjacent footprints overlap slightly and therefore must use different frequencies to avoid interference. However, two or more non-overlapping footprints can use the same set of frequencies in order to use efficiently the limited radio spectrum. Figure 1 from the application shows the coverage of a portion of the Earth's surface provided by multiple cone shaped beams:

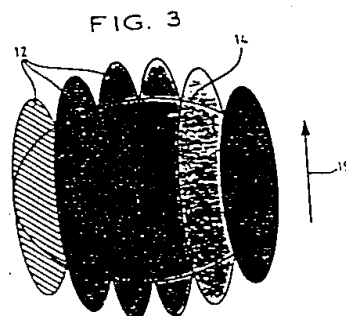
FIG. 1



Frequency reuse techniques, however, have a limited ability to compensate for congestion in geostationary orbits. To alleviate the orbit congestion problem, new telecommunications systems use a network of satellites in low Earth orbit. When viewed from a fixed point on the Earth's surface, such satellites do not remain stationary but move overhead. A satellite's motion as it transmits a plurality of cone-shaped beams creates a new problem. The satellite's movement causes a receiver on the Earth's surface to move from the footprint of one beam into a second beam transmitted by the same satellite. Eventually, the satellite's motion causes the receiver to move from the footprint of a beam transmitted by one satellite into the footprint of a beam transmitted by a second satellite. Each switch from one footprint to another creates a "handover" event analogous to that which occurs when a traditional cellular phone travels from one cell to another. Handovers are undesirable because

they can cause interruptions in signal transmission and reception.

Rouffet's application discloses technology to reduce the number of handovers between beams transmitted by the same satellite. In particular, Rouffet eliminates handovers caused solely by the satellite's motion. To accomplish this goal, Rouffet changes the shape of the beam transmitted by the satellite's antenna. Rouffet's satellites transmit fan-shaped beams. A fan beam has an elliptical footprint. Rouffet aligns the long axis of his beams parallel to the direction of the satellite's motion across the Earth's surface. By elongating the beam's footprint in the direction of satellite travel, Rouffet's invention ensures that a fixed point on the Earth's surface likely will remain within a single footprint until it is necessary to switch to another satellite. Because Rouffet's invention does not address handovers caused by the motion of the receiver across the Earth's surface, his arrangement reduces, but does not eliminate, handovers. Figure 3 from the application shows the footprints 12 from six beams aligned in the direction of satellite motion 15:



The application contains ten claims that stand or fall as a group. Claim 1 is representative:

A low orbit satellite communications system for mobile terminals, wherein the communications antenna system of each satellite provides isoflux coverage made up of a plurality of fan beams that are elongate in the travel direction of the satellite.

The examiner initially rejected Rouffet's claims as unpatentable over U.S. Pat. No. 5,199,672 (King) in view of U.S. Pat. No. 4,872,015 (Rosen) and a conference report entitled "A Novel Non-Geostationary Satellite Communications System," *Conference Record*, International Conference on Communications, 1981 (Ruddy). On appeal to the Board, the examiner added an alterna-

tive ground for rejection, holding that the claims were obvious over U.S. Pat. No. 5,394,561 (Freeburg) in view of U.S. Pat. No. 5,170,485 (Levine).

On April 16, 1997, the Board issued its decision. Because Rouffet had specified that the claims would stand or fall as a group based on the patentability of claim 1, the Board limited its opinion to that claim. The Board unanimously determined that the examiner had properly rejected claim 1 as obvious over King in view of Rosen and Ruddy. The Board, on a split vote, also affirmed the rejection over Freeburg in view of Levine.

II

To reject claims in an application under section 103, an examiner must show an un rebutted *prima facie* case of obviousness. See *In re Deuel*, 51 F.3d 1552, 1557, 34 USPQ2d 1210, 1214 (Fed. Cir. 1995). In the absence of a proper *prima facie* case of obviousness, an applicant who complies with the other statutory requirements is entitled to a patent. See *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). On appeal to the Board, an applicant can overcome a rejection by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness. See *id.*

While this court reviews the Board's determination in light of the entire record, an applicant may specifically challenge an obviousness rejection by showing that the Board reached an incorrect conclusion of obviousness or that the Board based its obviousness determination on incorrect factual predicates. This court reviews the ultimate determination of obviousness as a question of law. See *In re Lueders*, 111 F.3d 1569, 1571, 42 USPQ2d 1481, 1482 (Fed. Cir. 1997). The factual predicates underlying an obviousness determination include the scope and content of the prior art, the differences between the prior art and the claimed invention, and the level of ordinary skill in the art. See *Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH*, 139 F.3d 877, 881, 45 USPQ2d 1977, 1981 (Fed. Cir. 1998). This court reviews the Board's factual findings for clear error. See *In re Zurko*, 142 F.3d 1447, 1449, 46 USPQ2d 1691, 1693 (Fed. Cir. 1998) (in banc); *Lueders*, 111 F.3d at 1571-72. "A finding is clearly erroneous when, although there is evidence to support it, the reviewing court on the entire evidence is left with the definite and firm conviction that a mistake has been committed." *In re Graves*, 69 F.3d 1147, 1151, 36 USPQ2d

1697, 1700 (Fed. Cir. 1995) (quoting *United States v. United States Gypsum Co.*, 333 U.S. 364, 395 [76 USPQ 430] (1948)).

The secondary considerations are also essential components of the obviousness determination. See *In re Emert*, 124 F.3d 1458, 1462, 44 USPQ2d 1149, 1153 (Fed. Cir. 1997) ("Without Emert providing rebuttal evidence, this *prima facie* case of obviousness must stand."). This objective evidence of nonobviousness includes copying, long felt but unsolved need, failure of others, see *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 [148 USPQ 459] (1966), commercial success, see *In re Huang*, 100 F.3d 135, 139-40, 40 USPQ2d 1685, 1689-90 (Fed. Cir. 1996), unexpected results created by the claimed invention, unexpected properties of the claimed invention, see *In re Mayne*, 104 F.3d 1339, 1342, 41 USPQ2d 1451, 1454 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (Fed. Cir. 1990), licenses showing industry respect for the invention, see *Arkie Lures, Inc. v. Gene Larew Tackle, Inc.*, 119 F.3d 953, 957, 43 USPQ2d 1294, 1297 (Fed. Cir. 1997); *Pentec, Inc. v. Graphic Controls Corp.*, 776 F.2d 309, 316, 227 USPQ 766, 771 (Fed. Cir. 1985), and skepticism of skilled artisans before the invention, see *In re Dow Chem. Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1532 (Fed. Cir. 1988). The Board must consider all of the applicant's evidence. See *Oetiker*, 977 F.2d at 1445 ("An observation by the Board that the examiner made a *prima facie* case is not improper, as long as the ultimate determination of patentability is made on the entire record."); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). The court reviews factual conclusions drawn from this evidence for clear error. Whether the evidence presented suffices to rebut the *prima facie* case is part of the ultimate conclusion of obviousness and is therefore a question of law.

When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or motivation to combine the references. See *In re Geiger*, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987). Although the suggestion to combine references may flow from the nature of the problem, see *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996), the suggestion more often comes from the teachings of the pertinent references, see *In re Sernaker*, 702 F.2d 989, 994, 217 USPQ 1, 5 (Fed. Cir. 1983), or from the ordinary knowledge of those skilled in the art that certain references are of special importance in a particular field, see *Pro-Mold*, 75

F.3d at 1573 (citing *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 297 n.24, 227 USPQ 657, 667 n.24 (Fed. Cir. 1985)). Therefore, "[w]hen determining the patentability of a claimed invention which combines two known elements, 'the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination.'" See *In re Beatrice*, 974 F.2d 1309, 1311-12, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992) (quoting *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984)).

III

The parties agree that the five references asserted by the examiner are in the same field of endeavor as the invention. The parties also agree that the pertinent level of skill in the art — design of satellite communications systems — is high. On appeal, Rouffet asserts that the examiner and the Board erred by improperly combining references to render the claimed invention obvious.

The Combination of King, Rosen, and Ruddy

The Board first affirmed the rejection of Rouffet's claims over a combination of King, Rosen, and Ruddy. King discloses a system for launching a plurality of satellites into low Earth orbits from a single launch vehicle. Rosen teaches a geostationary satellite that uses a plurality of fan beams with their long axes oriented in an east-west direction to communicate with mobile and fixed terminals on the Earth.

The final, and most important, reference in this combination is Ruddy. Ruddy describes a television broadcast system that uses a series of satellites to retransmit signals sent from a ground station over a wide area. Rather than using a geostationary orbit, Ruddy teaches the use of a series of satellites in Molniya orbits. A satellite in a Molniya orbit always follows the same path through the sky when viewed from a fixed point on the ground. Viewed from the Earth, the orbital path includes a narrow, elliptical apogee loop. In order to transmit to these moving satellites from a ground station, Ruddy uses a fan beam with a long axis aligned with the long axis of the orbit's apogee loop. This alignment places the entire apogee loop within the footprint of the beam and eliminates the need for the ground station's antenna to track the satellite's motion around the apogee loop. Ruddy further teaches orbit param-

eters and spacing of multiple satellites to ensure that a satellite is always in the loop to receive and rebroadcast signals from the Earth station.

King and Rosen together teach the use of a network of satellites in low Earth orbit. Thus, Ruddy becomes the piece of the prior art mosaic that shows, in the reading of the Board, the use of "a plurality of fan beams that are elongate in the travel direction of the satellite." Ruddy, however, is different from the claimed invention in several respects. Specifically, the application claims the projection of multiple elliptical fan-shaped footprints from the satellite to the ground. See Claim 1, *supra*, see also Application at 6, lines 9-11 ("In addition, in this system, the geometrical shape of the beams 12 is changed: instead of being circular they are now elongate ellipses."). The application's written description further teaches that the invention's fan-shaped satellite beams will minimize handovers. See *id.* at lines 11-16 ("This considerably increases call durations between handovers.").

In contrast, Ruddy teaches that a ground station may use a single fan-shaped beam to transmit to a satellite in a unique Molniya orbit. The ground station transmits a beam into which a series of satellites in Molniya orbits will successively enter. At least two differences are evident: the application teaches projection of multiple beams from a satellite to the Earth, while Ruddy teaches projection of a single beam from the Earth to satellites. Moreover to the extent Ruddy contains a teaching about handovers, its teachings focus on use of the unique Molniya orbit to ensure that a satellite always falls within the beam transmitted by the ground station.

These differences suggest some difficulty in showing a *prima facie* case of obviousness. The Board, however, specifically found that artisans of ordinary skill in this field of art would know to shift the frame of reference from a ground station following a satellite to a satellite transmitting to the ground. According proper deference to the Board's finding of a lofty skill level for ordinary artisans in this field, this court discerns no clear error in the Board's conclusion that these differences would not preclude a finding of obviousness. While Ruddy does not expressly teach alignment of the fan beam with the apparent direction of the satellite's motion, this court perceives no clear error in the Board's determination that Ruddy would suggest such an alignment to one of skill in this art. Therefore, the Board did not err in finding that the combination of King, Rosen, and Ruddy contains all of the elements claimed in Rouffet's application.

[1] However, the Board reversibly erred in determining that one of skill in the art would have been motivated to combine these references in a manner that rendered the claimed invention obvious. Indeed, the Board did not identify any motivation to choose these references for combination. Ruddy does not specifically address handover minimization. To the extent that Ruddy at all addresses handovers due to satellite motion, it addresses this subject through the selection of orbital parameters. Ruddy does not teach the choice of a particular shape and alignment of the beam projected by the satellite. Thus Ruddy addresses the handover problem with an orbit selection, not a beam shape. The Board provides no reasons that one of ordinary skill in this art, seeking to minimize handovers due to satellite motion, would combine Ruddy with Rosen and King in a manner that would render the claimed invention obvious.

Obviousness is determined from the vantage point of a hypothetical person having ordinary skill in the art to which the patent pertains. See 35 U.S.C. § 103(a). This legal construct is akin to the "reasonable person" used as a reference in negligence determinations. The legal construct also presumes that all prior art references in the field of the invention are available to this hypothetical skilled artisan. See *In re Carlson*, 983 F.2d 1032, 1038, 25 USPQ2d 1207, 1211 (Fed. Cir. 1993).

As this court has stated, "virtually all [inventions] are combinations of old elements." *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 698, 218 USPQ 865, 870 (Fed. Cir. 1983); see also *Richdel, Inc. v. Sunspool Corp.*, 714 F.2d 1573, 1579-80, 219 USPQ 8, 12 (Fed. Cir. 1983) ("Most, if not all, inventions are combinations and mostly of old elements."). Therefore an examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be "an illogical and inappropriate process by which to determine patentability." *Sensonic, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570, 38 USPQ2d 1551, 1554 (Fed. Cir. 1996).

To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the examiner to

show a motivation to combine the references that create the case of obviousness. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.

[2] This court has identified three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. In this case, the Board relied upon none of these. Rather, just as it relied on the high level of skill in the art to overcome the differences between the claimed invention and the selected elements in the references, it relied upon the high level of skill in the art to provide the necessary motivation. The Board did not, however, explain what specific understanding or technological principle within the knowledge of one of ordinary skill in the art would have suggested the combination. Instead, the Board merely invoked the high level of skill in the field of art. If such a rote invocation could suffice to supply a motivation to combine, the more sophisticated scientific fields would rarely, if ever, experience a patentable technical advance. Instead, in complex scientific fields, the Board could routinely identify the prior art elements in an application, invoke the lofty level of skill, and rest its case for rejection. To counter this potential weakness in the obviousness construct, the suggestion to combine requirement stands as a critical safeguard against hindsight analysis and rote application of the legal test for obviousness.

Because the Board did not explain the specific understanding or principle within the knowledge of a skilled artisan that would motivate one with no knowledge of Rouffet's invention to make the combination, this court infers that the examiner selected these references with the assistance of hindsight. This court forbids the use of hindsight in the selection of references that comprise the case of obviousness. See *In re Gorman*, 933 F.2d 982, 986, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991). Lacking a motivation to combine references, the Board did not show a proper *prima facie* case of obviousness. This court reverses the rejection over the combination of King, Rosen, and Ruddy.

The Combination of Freeburg and Levine

Freeburg teaches a cellular radiotelephone system based on a constellation of low Earth orbit satellites that use conical beams

to transmit from the satellite to both fixed and mobile Earth stations. Levine teaches an Earth-based cellular radio system that uses fan beams broadcast from antenna towers. Levine's elliptical footprints are aligned with the road grid. To increase the capacity of traditional ground-based systems through frequency reuse techniques, Levine teaches the use of antennas that broadcast signals with smaller footprints than the prior art system. Thus, Levine actually increases the number of overlap regions between cells and, hence, the number of potential handovers. Figure 1 of the Levine patent illustrates its alignment of beam footprints.

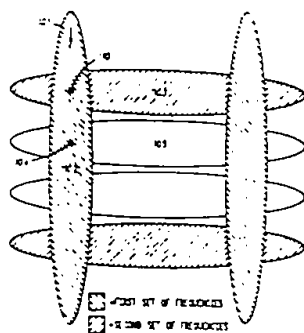


FIG. 1

As a mobile unit (e.g., a driver using a car phone) moves through a succession of overlapping zones, Levine uses selection algorithms to determine which of the cells is aligned with the travel direction of the mobile unit. These algorithms then select this cell for use while continually monitoring intersecting cells in the event that the mobile unit changes direction.

Once again, this court notes significant differences between the teachings of the application and the Levine-Freeburg combination. The critical Levine reference again involves a beam from an Earth station without any reference to the "travel direction of [a] satellite." Moreover, Levine actually multiplies the number of potential handovers and then uses software to sort out the necessary handovers from the unnecessary. However, the Board explains the reasons that one possessing the lofty skills characteristic of this field would know to account for the differences between the claimed invention and the prior art combination. This court discerns no clear error in that reliance on the considerable skills in this field.

[3] This court does, however, discern reversible error in the Board's identification of a motivation to combine Levine and Freeburg. In determining that one of skill in the art would have had motivation to combine Levine and Freeburg, the Board noted that "[t]he level of skill in the art is very high." As noted before, this observation alone cannot supply the required suggestion to combine these references. The Board posits that the high level of skill in the art overcomes the absence of any actual suggestion that one could select part of the teachings of Levine for combination with the satellite system disclosed by Freeburg.

As noted above, the suggestion to combine requirement is a safeguard against the use of hindsight combinations to negate patentability. While the skill level is a component of the inquiry for a suggestion to combine, a lofty level of skill alone does not suffice to supply a motivation to combine. Otherwise a high level of ordinary skill in an art field would almost always preclude patentable inventions. As this court has often noted, invention itself is the process of combining prior art in a nonobvious manner. *See, e.g., Richdel*, 714 F.2d at 1579; *Environmental Designs*, 713 F.2d at 698. Therefore, even when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. *Cf. Gechter v. Davidson*, 116 F.3d 1454, 43 USPQ2d 1030 (Fed. Cir. 1997) (explaining that the Board's opinion must describe the basis for its decision). In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious.

The Board's naked invocation of skill in the art to supply a suggestion to combine the references cited in this case is therefore clearly erroneous. Absent any proper motivation to combine part of Levine's teachings with Freeburg's satellite system, the rejection of Rouffet's claim over these references was improper and is reversed.

IV

The Board reversibly erred in determining that there was a motivation to combine either the teachings of King, Rosen, and Rudy or of Freeburg and Levine in a manner that would render the claimed invention obvious. Because this predicate was missing in each case, the Board did not properly show that these references render the claimed invention obvious. Therefore this court re-

verses the Board's decision upholding the rejection of Rouffet's claims. In light of this disposition, Rouffet's pending motion to remand the case to the Board for further consideration is denied as moot.

COSTS

Each party shall bear its own costs.

REVERSED.

U.S. Court of Appeals Federal Circuit

Champagne Louis Roederer S.A. v. Delicato Vineyards

No. 98-1032

Decided July 16, 1998

TRADEMARKS AND UNFAIR TRADE PRACTICES

1. Infringement; conflicts between marks — Likelihood of confusion — Particular marks — Confusion not likely (§335.0304.05)

Infringement; conflicts between marks — Tests generally (§335.06)

Trademark Trial and Appeal Board did not err in dismissing opposition proceeding on ground that applicant's "Crystal Creek" mark for wine and opposer's "Cristal" marks for champagne are dissimilar with respect to appearance, sound, significance, and commercial impression, since board did not err in relying solely on dissimilarity of marks in evaluating likelihood of confusion, since single factor may be dispositive in likelihood of confusion analysis, especially when that factor is dissimilarity of marks, and since no instances of clear error regarding board's findings of fact as to dissimilarities of marks have been demonstrated.

Appeal from the U.S. Patent and Trademark Office, Trademark Trial and Appeal Board.

Proceeding (Opposition No. 80,932) brought by Champagne Louis Roederer S.A. in opposition to application filed by Delicato Vineyards to register mark "Crystal Creek" for wine. From dismissal of opposition proceeding, opposer appeals. Affirmed; Michel, J., concurring in separate opinion.